

Claims:

1. A dough composition comprising a basic active ingredient, an acidic active ingredient, and a barrier material, wherein
- 5 at below baking temperature the barrier material separates basic active ingredient from acidic active ingredient to inhibit reaction of basic active ingredient and acidic active ingredient,
- the acidic active ingredient is selected to have relatively low solubility in the dough composition below baking temperature and to be substantially soluble in the bulk dough composition during baking, and
- 10 the barrier material degrades at or above the baking temperature to allow the basic active ingredient and acidic active ingredient to come into contact in the dough composition and react to substantially leaven the dough composition during baking.
- 15 2. The composition of claim 1 wherein the dough composition has a raw specific volume in the range from about 1.0 to about 1.6 cubic centimeters per gram, and the dough composition can be baked to a specific volume of at least about 2.0 cubic centimeters per gram.
- 20 3. The composition of claim 1 wherein the dough composition contains from about 0.25 to about 2 wt% basic active ingredient encapsulated in barrier material, and an amount of acidic active ingredient to neutralize the encapsulated basic active ingredient.
- 25 4. The composition of claim 3 wherein the composition contains no other leavening agent except for the separated about 0.25 to about 2 wt% basic active ingredient and the amount of acidic active ingredient to neutralize the about 0.25 to about 2 wt% encapsulated basic active ingredient.
- 30 5. The composition of claim 1 wherein the acidic active ingredient comprises a suspended solid that is relatively insoluble at processing and refrigerated storage temperatures, which dissolves and solubilizes into the aqueous phase of the dough

composition when the dough composition reaches a baking temperature in the range from about 100°F to 200°F.

5 6. The composition of claim 1 wherein the acidic active ingredient has a solubility of greater than 35 kcal/mole.

7. The composition of claim 1 wherein the acidic active ingredient is selected from the group consisting of sodium aluminum phosphate, sodium acid pyrophosphate, and mixtures thereof.

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8. The composition of claim 1 wherein the acidic active ingredient is sodium aluminum phosphate.

15 9. The composition of claim 1 comprising encapsulated particles comprising basic active ingredient and barrier material.

10. The composition of claim 9 wherein the basic active ingredient is soluble in a water phase of the dough composition at one or more of a processing or refrigeration storage temperature.

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11. The composition of claim 9 wherein the basic active ingredient is chosen from the group consisting of sodium bicarbonate, potassium bicarbonate, ammonium bicarbonate, and combinations thereof.

25 12. The composition of claim 1 wherein the barrier material has a melting temperature of at least 90°F.

30 13. The composition of claim 12 wherein the barrier material comprises a fat-type barrier material selected from the group consisting of palm kernel oil, canola oil, a synthetic analog of palm kernel oil or canola oil, and combinations thereof.

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14. The composition of claim 9 wherein the encapsulated particles comprise from about 40 to about 65 weight percent active basic material.
15. The composition of claim 9 wherein the encapsulated particles have an average size in the range from about 100 to about 420 microns.
16. The composition of claim 1 wherein the basic active ingredient is sodium bicarbonate.
17. The composition of claim 1 wherein the baking temperature is in the range from about 100°F to about 200°F.
18. The composition of claim 1 wherein the barrier material is a fat-type barrier material having a solid fat index of at least about 50% at 75°F.
19. The composition of claim 1 comprising encapsulated particles comprising particulates of basic active ingredient dispersed in a barrier material coating, wherein the size and composition of the particulates, and the relative amount, thickness, and composition of the barrier material coating, are selected such that the basic active ingredient particulates become exposed to bulk dough composition and become hydrated during baking.
20. A dough composition comprising encapsulated particles comprising basic active ingredient particulates coated by barrier material, and further comprising encapsulated particles comprising acidic active ingredient particulates coated by barrier material.
21. The composition of claim 20 wherein the dough composition has a raw specific volume prior to cooking in the range from about 1.0 to about 1.6 cubic centimeters per gram, and the dough composition can be baked to a specific volume in the range from about 2.0 to about 3.0 cubic centimeters per gram.

22. The composition of claim 20 wherein the barrier materials are the same or different, and each independently has a melting point in the range from about 90°F to about 160°F.

5 23. The composition of claim 20 wherein the barrier materials are the same or different and independently comprise a vegetable oil chosen from the group consisting of palm kernel oil, canola oil, a synthetic analog of palm kernel oil or canola oil, and combinations thereof. *all 8/30/01*

10 24. The dough composition of claim 20 wherein  
at below baking temperature the barrier materials separate each of  
the basic active ingredient and acidic active ingredient from bulk dough  
composition, and  
the barrier materials degrade at or above baking temperature to  
15 allow the basic active ingredient and acidic active ingredient to come into  
contact in the bulk dough composition to react and leaven the dough  
composition during baking.

20 25. The dough composition of claim 20 wherein the acidic active ingredient is  
selected from the group consisting of sodium aluminum phosphate, sodium  
aluminum sulfate, sodium acid pyrophosphate, monosodium phosphate,  
monocalcium phosphate monohydrate, anhydrous monocalcium phosphate,  
dicalcium phosphate dihydrate, and mixtures thereof.

25 26. The dough composition of claim 20 wherein the acidic active ingredient is  
selected from the group consisting of sodium aluminum phosphate, sodium acid  
pyrophosphate, and mixtures thereof.

30 27. A dough composition comprising a basic active ingredient, an acidic active  
ingredient, and a barrier material, wherein

at below baking temperature, barrier material separates basic active ingredient from acidic active ingredient to inhibit reaction of basic active ingredient and acidic active ingredient,

the barrier material degrades at or above baking temperature to allow the basic active ingredient and acidic active ingredient to come into contact in the dough composition and substantially leaven the dough composition during baking, and

the barrier material is a fat-type barrier material having a solid fat index of at least about 50% at 75°F.

28. The composition of claim 27 wherein the barrier material comprises a vegetable oil selected from the group consisting of <sup>palm oil</sup> palm kernel oil, canola oil, and combinations thereof.

29. A method of producing a cooked dough product, the method comprising combining dough ingredients into a bulk dough composition comprising a basic active ingredient and an acidic active ingredient, the basic active ingredient and the acidic active ingredient being separated by barrier material, wherein the dough ingredients are combined at a temperature below the melting temperature of the barrier material, and wherein the acidic active ingredient is selected to have relatively low solubility in the dough composition at below baking temperature, refrigerating the dough composition at a temperature below the melting temperature of the barrier material, and

baking the dough composition at a temperature that causes bulk dough composition to reach a baking temperature above the melting temperature of the barrier material such that the barrier material melts, exposing one or more of the basic active ingredient or the acidic active ingredient to the bulk dough composition, allowing the basic active ingredient and acidic active ingredient to react to leaven the dough composition during baking.

30. The method of claim 29 wherein the dough composition contains from about 0.25 to about 2 weight percent basic active ingredient separated by barrier

material from an amount of acidic active ingredient sufficient to neutralize the basic active ingredient.

31. The method of claim 29 wherein the barrier material has a melting point in the range from about 90°F to about 160°F.

32. The method of claim 29 wherein the basic active ingredient is chosen from the group consisting of sodium bicarbonate, potassium bicarbonate, ammonium bicarbonate, and mixtures thereof.

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33. The method of claim 32 wherein the baking temperature is greater than 100°F.

34. The method of claim 29 wherein the barrier material comprises a hydrophobic material selected from the group consisting of a fat, an emulsifier, and combinations thereof.

35. A method of producing a cooked dough product, the method comprising combining dough ingredients into a bulk dough composition comprising a basic active ingredient and an acidic active ingredient, the basic active ingredient and the acidic active ingredient being separated by a barrier material, wherein the dough ingredients are combined at a temperature below the melting temperature of the barrier material, and wherein the barrier material is a fat-type barrier material having a solid fat index of at least about 50% at 75°F, and

25 refrigerating the dough composition at a temperature below the melting temperature of the barrier material, and

baking the dough composition at a temperature that raises the bulk dough composition to a baking temperature above the melting temperature of the barrier material such that the barrier material melts, exposing one or more of the basic active ingredient or acidic active ingredient to the bulk dough composition, allowing the basic active ingredient and acidic active ingredient to react to leaven the dough composition during baking.